



(12) **United States Patent**
Yu et al.

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(54) **RADIO FREQUENCY LDMOS DEVICE AND A FABRICATION METHOD THEREFOR**

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(58) **Field of Classification Search**
CPC *H01L 29/7816*; *H01L 23/66*; *H01L 29/66681*; *H01L 29/402*; *H01L 29/1095*
See application file for complete search history.

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(57) **ABSTRACT**

A radio frequency LDMOS device, wherein the drift region includes a first injection region and a second injection region; the first injection region situated between a second lateral surface of a polysilicon gate and a second lateral surface of a first Faraday shielding layer; the second injection region situated between the second lateral surface of the first Faraday shielding layer and the drain region and encloses the drain region; the second lateral surface of the second Faraday shielding layer is a surface of a side near the drain region, the maximum electric field strength of the drift region on the bottom of the second lateral surface of the second Faraday shielding layer is regulated via regulation of the doping concentration of the second injection region; the doping concentration of the first injection region is higher than the second injection region.

14 Claims, 6 Drawing Sheets

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